

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER 94-123

SITE CLEANUP REQUIREMENTS FOR:

CITY AND COUNTY OF SAN FRANCISCO

FOR THE PROPERTY AT:

2548 24TH STREET, CITY AND COUNTY OF SAN FRANCISCO

FINDINGS:

The California Regional Water Quality Control Board, San Francisco Bay Region (herein after called the "Regional Board") finds that:

1. SITE DESCRIPTION:

- a. The site is located at 2548 24th Street, City and County of San Francisco, California (See Figure 1). The City and County of San Francisco installed, owned, and operated underground storage tanks (UST's) since the early 1940's and is therefore named as the discharger. San Francisco Municipal Railways (hereinafter SF Muni), a division of the City and County of San Francisco, has operated the property since the 1940's. The property has been and is currently being used as a maintenance facility. The property takes up an entire city block, bounded by 23rd and 24th Streets and Utah Street and San Bruno Avenue. The existing structures at the site have been scheduled for demolition in November 1994 as part of the City and County of San Francisco's plan to construct a multistory garage for users of San Francisco General Hospital and nearby residents.
- b. The site is surrounded by residences (See Figure 2) although the site itself is located within a commercial district.

2. SITE HISTORY

- a. In 1987, nine underground storage tanks were removed from two excavations. The tanks were located between the asphalt sidewalk on the west side of San Bruno Avenue and north of 24th Street. The tanks were removed between MAY 7 and May 12, 1987. Both soil and groundwater was analyzed under the appropriate EPA approved methods for gasoline and diesel and was found to contain elevated levels of petroleum hydrocarbons. According to the tank removal report, dated

June 26, 1987, eight of the nine tanks were found to have holes from 1/4 inch to 2 feet in diameter. Soil staining was prevalent throughout both excavation areas.

- b. In 1989, six soil borings were drilled and four were subsequently converted to monitoring wells. The maximum soil concentrations found were 8,000 ppm and 17,000 ppm for TPH-Gasoline and TPH-Diesel, respectively. The BTEX ranged from 36 ppb to 250,000 ppb. In February 1989, floating product was observed in three of the four wells with thicknesses ranging from .98 to 3.9 feet .
- c. In August 1990, five additional soil borings were drilled and completed as monitoring wells. Groundwater sampling indicated that floating hydrocarbon product was found in several wells, ranging from .14 feet to 3.72 feet.
- d. In August 1991, a continuous aquifer pump test was performed. The pump test indicated that the aquifer had a substantial yield of approximately 20 gallons per minute from a single well head. Additionally, the groundwater had a total dissolved solids (TDS) value of less than 3000 ppm. According to State Board Resolution 88-63, if more than 200 gallons/day can be achieved from a single well head and the TDS is below 3000 ppm, groundwater is classified as a potential drinking water source.
- e. In February 1992, as part of a pilot test to evaluate remedial options, four soil vapor extraction (SVE) wells were installed. These wells were four inches in diameter and extended to a depth between 25 feet and 30 feet. Consultants for the City and County of San Francisco predicted the system would remove benzene concentrations below the detection limits in 6 to 12 months. As of August 12, 1994, those results have not been achieved.
- f. As of March 25, 1994 an estimated 7,888 pounds of petroleum hydrocarbons have been removed. Regardless, as shown in the center of Figure 2, three wells continue to have free product, ranging from 1.81 feet to 2.29 feet.
- g. On June 6, 1994, the Regional Board, the City and County of San Francisco staff, and Harding Lawson Associates met to discuss a workplan for additional site assessment. Following the meeting, Harding Lawson Associates prepared a revised workplan dated July 11, 1994 that was approved by Regional Board staff on August 18, 1994.

3. REGULATORY STATUS Previous studies indicate that both the soil and groundwater have been impacted by petroleum substances and their associated constituents such as benzene, toluene, ethylbenzene, and xylene (BTEX) emanating from the former underground fuel tank systems. To date, the extent of soil and groundwater contamination has not been fully defined. The City and County of San Francisco has, however, submitted a workplan, dated July 11, 1994, to further assess the extent of soil and groundwater contamination pursuant to their approved workplan of July 11, 1994. The results of this investigation are to be submitted as part of the requirements of this Order.
4. HYDROGEOLOGY The first water bearing zone occurs at 22 to 25 feet below grade surface. The first three to seven feet below grade consists of a brown sandy clay. A silty sand underlies this layer to a depth varying from 15 to 25 feet.
5. ADJACENT PROPERTIES Land uses in the area are mainly residential. No known dischargers with leaking underground storage tanks have been identified within the area. However, along Vermont Street (See Figure 2, MW 11) there appears to be groundwater contamination that is contradictory with the gradient information presented in the reports. Whether the contamination along Vermont Street exists because of the former UST's removed from this site, other potential UST's in the area, preferential pathways, or leaking sewer lines, is still not clear.
6. SUBSURFACE INVESTIGATIONS Past Investigations have been performed to determine the extent of petroleum contamination in the soil and groundwater due to releases from the underground fuel tanks. Soil and groundwater in the first aquifer has been impacted with petroleum hydrocarbons, benzene, toluene, xylene, and ethyl-benzene. The contamination has migrated off-site and has impacted other properties within the vicinity.

Currently an investigation is underway to determine the extent of soil contamination on and off-site, and to delineate the vertical and horizontal extent of the groundwater contamination both on and off-site.

7. GROUNDWATER CONTAMINATION The first groundwater bearing zone has been impacted with petroleum hydrocarbons, benzene, toluene, xylene, ethyl-benzene. As of April 1994, free product has been documented both on-site and off-site in various wells. Product thicknesses range from 1.81 feet to 2.29 feet. Groundwater contamination has been suspected of traveling 450 feet south (downgradient) of the site. The downgradient extent of the plume emanating from the site has not yet been determined.

8. INTERIM REMEDIAL ACTIONS Approximately 352 cubic yards of soil on site has been removed to date. A soil vapor extraction (SVE) system is currently in operation. However, it is anticipated that beginning in November 1994, the system will be shut off for approximately three months to allow for construction of the multistory garage to begin.
9. SCOPE OF THIS ORDER This Order contains tasks for the completion of soils and groundwater characterization at the site; evaluation of remedial actions for on-site soil contamination; completion of groundwater characterization off-site; evaluation and implementation of off-site groundwater controls to arrest the migration of contamination emanating from the site; implementation of final cleanup actions for soils on-site and groundwater both on-site and off-site caused by the contamination emanating from the site. These tasks are necessary to alleviate the threat to surface and groundwater posed by further migration of chemicals originating from the site, and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.
10. The Regional Board adopted a revised Water Quality Control Plan (Basin Plan) on December 17, 1986 with subsequent amendments. The Basin Plan identifies beneficial uses and water quality objectives for the surface and ground waters in the region, as well as discharge prohibitions intended to protect beneficial uses.
11. The present and potential beneficial uses for groundwater are listed in the Basin Plan. The shallow groundwater zone underlying the site currently has no existing use. The potential beneficial uses for the groundwater zone underlying and adjacent to the facility include:
 - a. Industrial process water supply
 - b. Industrial service water supply
 - c. Municipal and Domestic water supply
 - d. Agricultural water supply
12. The Lower Bay, part of the San Francisco Bay, is the nearest surface water body to the site, approximately 1 mile away. The existing and potential beneficial uses of the Lower Bay include:
 - a. Industrial Service Supply
 - b. Navigation
 - c. Preservation of Rare and Endangered Species
 - d. Estuarine Habitat
 - e. Wildlife Habitat
 - f. Fish Spawning

- g. Shellfish Harvesting
 - h. Water Contact Recreation
 - i. Non-Contact Water Recreation
 - j. Commercial and Sport Fishing
 - k. Fish Migration
13. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and create or threaten to create a condition of pollution or nuisance.
14. This action is an Order to enforce the laws and regulations administered by the Regional Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of Title 14 of the California Administrative Code, Enforcement Actions by Regulatory Agencies.
15. The Regional Board has notified the discharger, any other responsible parties and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
16. Pursuant to Section 13304 of the Water Code, the discharger is hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, require by this Order. On February 24, 1994, the City and County of San Francisco agreed with the Regional Board to enter into a voluntary cost recovery program. This program reimburses the Regional Board for costs in providing oversight.
17. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. Remediation Activities: The dischargers shall conduct site investigation, monitoring and remediation activities as needed to define the current hydrogeologic conditions, to define the lateral and vertical extent of soil contamination on-site, to define the lateral and vertical extent of groundwater pollution on or emanating from the site, remediate as may be required any soil contamination on-site, and remediate as may be required any groundwater pollution on or emanating from the site. Should monitoring results show evidence of pollutant migration, the source of which is the site, additional characterization and remediation may be required.
2. Nuisance: The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
3. Clean-up Goals - Soils: The cleanup goals for on-site contaminated soils are as follows. For total petroleum hydrocarbons as gasoline (TPH-g) the residual soil concentration shall be equal or less than 10 ppm and for total petroleum hydrocarbons as diesel (TPH-d) the residual soil concentration shall be equal to or less than 100 ppm. For benzene, toluene, ethylbenzene, and xylene (BTEX) the residual concentrations shall be non-detect using appropriate method detection limits. Experience has shown that at these levels, groundwater impact has traditionally not been observed. All samples shall be analyzed using applicable EPA analytical methods or methods shown through Regional Board approval to be equivalent to EPA methods.

The soil cleanup levels can be appropriately modified by the Executive Officer if the discharger is able to demonstrate, with site-specific data, that higher levels of contaminants in the soil will not threaten the waters of the State and that human health and the environment are protected. If any contaminants are left in the soil in concentrations in excess of the cleanup levels, follow up groundwater monitoring may be required.

4. Clean-up Levels - Groundwater: Cleanup goals for polluted groundwater, on-site and off-site, shall be in accordance with the State Water

Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", and other applicable standards. Proposed final cleanup standards shall be based on an evaluation of the cost, effectiveness of the proposed remedy, and a risk assessment to determine any effects on human health and the environment, and shall be approved by the Executive Officer. These levels shall have a goal of reducing the mobility, toxicity, and volume of pollutants.

5. Reclamation: If groundwater extraction and treatment is considered as an alternative, the feasibility of water reuse, re-injection, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the discharger shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The discharger shall not be found in violation of this Order if documented factors beyond the discharger's control prevent the discharger from attaining this goal, provided the discharger has made a good faith effort to attain this goal. If discharge to waters of the State is part of a proposed alternative, an application for an NPDES permit must be completed and submitted, and must include the evaluation of the feasibility of the water reuse, re-injection, and disposal to the sanitary sewer.

C. PROVISIONS

1. The discharger shall comply with the Prohibitions and Specifications above, in accordance with the following time schedule and tasks. In performing the tasks, the discharger should exhaust all reasonable means to obtain access. Should the dischargers experience difficulty with obtaining access to other properties for purposes of investigation and remediation, the Regional Board may name other persons as dischargers, to the extent permitted by law.

- a. TASK: SUBMIT A GROUNDWATER MONITORING PLAN

DUE DATE: OCTOBER 31, 1994

Description: Submit a groundwater monitoring plan, acceptable to the Executive Officer, that addresses monitoring the groundwater wells representative of the conditions found in the first groundwater bearing zone on and off the site. The plan shall include monitoring of the groundwater in the areas where total

petroleum hydrocarbons, benzene, toluene, xylene, and ethylbenzene that originated from the SF Muni facility have been detected. The monitoring plan may be modified based upon the results obtained from the current investigation and subsequent investigations with concurrence from the Regional Board staff.

- b. **TASK:** SUBMIT RESULTS OF ENVIRONMENTAL INVESTIGATION (WORKPLAN APPROVED ON AUGUST 18, 1994)

DUE DATE: NOVEMBER 21, 1994

Description: The dischargers shall submit a technical report acceptable to the Executive Officer containing the results of the investigation as specified in the July 11, 1994 Revised Work Plan Amendment prepared by Harding Lawson Associates and approved by the Regional Board Executive Officer.

- c. **TASK:** SUBMIT A FINAL SITE REMEDIATION PLAN ADDRESSING SOIL AND ALL GROUNDWATER POLLUTION FOUND AS A RESULT OF TASK 1 b.

DUE DATE: DECEMBER 30, 1994

Description: Submit a Site Remediation Plan, acceptable to the Executive Officer, that fully describes any remedial actions to be taken to control, abate and/or remove pollution (the source of which is the site) found in the soils on site and the groundwater on and off-site in the shallow aquifer. The plan shall include: a discussion of all existing data, a review of the effectiveness of the remedial measures from the previous investigations, preliminary plans for final groundwater remedial action as deemed necessary, preliminary plans of proposed extraction and treatment systems, and a comprehensive schedule for implementation of such remedial action(s).

- d. **TASK:** COMMENCE IMPLEMENTATION OF THE FINAL REMEDIAL ACTION PLAN FOR SOILS AND GROUNDWATER ON AND OFF SITE

DUE DATE: Forty-five days after approval of the final remediation action plan

- e. **TASK:** SUBMIT A REPORT ON THE EFFECTIVENESS OF

THE FINAL REMEDIAL ACTION FOR BOTH SOILS
AND GROUNDWATER

DUE DATE: JULY 15, 1995

Description: Submit a technical report, acceptable to the Executive Officer, which evaluates the effectiveness of any required remedial actions for the soil and groundwater emanating from the subject property. This report should include implementation and/or modifications of additional measures necessary to fully remediate or contain the groundwater.

2. The discharger shall submit to the Regional Board reports acceptable to the Executive Officer on compliance with the requirements of this Order, and acceptable activity monitoring reports that contain descriptions and results of work and analysis performed. These reports are to be submitted according to a program below.
 - a. **ON A QUARTERLY BASIS**, the dischargers shall submit status reports, which may be prepared in a business letter format, documenting compliance with this Order commencing on **January 15, 1995**. Thereafter, reports shall be due **quarterly** on the 15th of the next month of the quarter sampling is due. Therefore, quarterly sampling should be done during the last week of each day ensuing March, June, September, and December. Each quarterly report shall cover the previous calendar quarter and include at least the following information:
 - i. Summary of the work completed since submittal of the previous report, and work projected to be completed before the submittal of the next report.
 - ii. Identification of any identified obstacles which may threaten compliance with the schedule set forth by this Order, and what actions are being taken to overcome these obstacles.
 - b. **ADDITIONALLY, ON A QUARTERLY BASIS**, technical reports documenting quarterly groundwater monitoring shall be submitted by the dischargers to the Regional Board commencing **January 15, 1995**, and covering the previous calendar quarter. Each quarterly monitoring report shall include, but not be limited to, the following information:

- i. Cumulative tabulated results of free product measurements and water quality sampling analyses for all monitoring wells both on and off-site. This data shall be accompanied by contamination isoconcentration plume maps for each chemical constituent of concern for the first water bearing formations based upon the results of the recent sampling event.
 - ii. A cumulative tabulation of all quarterly water level measurements.
 - iii. Quarterly updated water table and piezometric surface maps, based upon the most recent water level measurements for all affected water bearing zones for all on-site and off-site wells.
 - iv. A cumulative tabulation of volume of extracted groundwater, quarterly chemical analyses results for all extraction wells, and a report indicating the pounds of pollutants removed during the quarter and total pounds of pollutants removed to date.
 - v. Reference diagrams and maps including the hydrogeologic conditions of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying facilities and structures.
 - c. **ON AN ANNUAL BASIS**, technical reports on the progress of compliance with all requirements of this Order and any proposed modifications which could increase the effectiveness of final cleanup actions shall be submitted to the Regional Board by the dischargers. The first annual compliance report is due **January 15, 1995**, and would cover the previous calendar years activities. Annual reports may include quarterly reports due concurrently. The annual progress reports shall include, but not necessarily be limited to, progress on site investigation and remediation activities, operation and implementation of interim and final remediation systems, effectiveness of remediation actions and systems, and an evaluation of the feasibility of meeting the groundwater and soil cleanup goals established by this Order.
3. The discharger may, by written request, seek modifications or revisions, or termination of this Order or any program, plan, or schedule submitted pursuant to this Order at any time. This Order and any applicable

program, plan, or schedule may be modified, terminated, or revised by the Regional Board.

4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer. If, for any reason, the dischargers are unable to perform any activity or submit any document within the time required under this Order, the discharger may make a written request for a specified extension of time. The extension request shall include justification for the delay, and shall be submitted to the Regional Board in advance of the date on which the activity is to be performed or the document is due.
5. All hydrogeological plans, specifications, technical reports and documents shall be signed by or stamped with the seal of registered geologist, registered civil engineer, or certified engineering geologist.
6. All samples shall be analyzed by a State certified laboratory or laboratory accepted by the Regional Board using approved EPA methods for the type of analysis to be performed.
7. The discharger shall maintain in good working order, and operate in the normal standard of care, any facility or control system installed to achieve compliance with the requirements of this Order.
8. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided as designated by the Executive Officer.
9. The discharger shall permit the Regional Board or its authorized representative, in accordance with Section 13267 (c) of the California Water Code:
 - a. Entry upon dischargers' premises in which any pollution sources exist, or are suspected to exist, or inspection of any required records, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms or conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may

become accessible, as part of any investigation or remedial action program undertaken by the discharger.

10. To the extent a discharger has any present ownership or present possessory interest in or to the site, such discharger shall file a report in a timely manner on any changes in site occupancy and ownership associated with this facility/property described in this Order.
11. If in performing any work pursuant to this Order, any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the dischargers shall report such a discharge to this Board, at (510) 286-1255 on weekdays during office hours from 8:00 a.m. to 5:00 p.m., and the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Board within five (5) working days and shall contain information relative to: the nature of the waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control and Countermeasure Plan in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.
12. This Order is intended to be the primary regulating document by which site cleanup shall proceed for the discharger and properties identified herein, with the Regional Board as lead agency. The discharger shall establish a primary contact representing the named discharger and submit the named representative to the Regional Board.
13. The discharger shall be liable, pursuant to Section 13304 of the Water Code, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to procedures established in that program. Any disputes raised by the discharger over the reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures of that program.
17. The Regional Board will review this Order periodically and may revise the requirements when necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full,

true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 21, 1994.

A handwritten signature in cursive script, appearing to read "L. P. Ritchie", is written over a horizontal line.

for
Steven R. Ritchie
Executive Officer